PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

JORIO, Paolo et al.
c/o Studio Torta S.r.l.
Via Viotti, 9
I-10121 Torino
ITALIE

PCT

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(PCT Rule 71.1)

Date of mailing *(day/month/year)*	24.06.2005
Applicant's or agent's file reference	**IMPORTANT NOTIFICATION**
E-2111/04	

International application No.	International filing date *(day/month/year)*	Priority date *(day/month/year)*
PCT/EP2004/050433	02.04.2004	04.04.2003

Applicant
FERRARI S.P.A. et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.

2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.

3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international preliminary examining authority:

European Patent Office - Gitschiner Str. 103
D-10958 Berlin
Tel. +49 30 25901 - 0
Fax: +49 30 25901 - 840

Authorized Officer

Cornéglio, B

Tel. +49 30 25901-674

PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference E-2111/04	**FOR FURTHER ACTION**	See Form PCT/IPEA/416
International application No. PCT/EP2004/050433	International filing date *(day/month/year)* 02.04.2004	Priority date *(day/month/year)* 04.04.2003
International Patent Classification (IPC) or national classification and IPC B62D1/04, B60K28/00, B60T8/00		
Applicant FERRARI S.P.A. et al.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☒ *sent to the applicant and to the International Bureau)* a total of 8 sheets, as follows:
      ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒	Box No. I	Basis of the opinion
☐	Box No. II	Priority
☐	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
☐	Box No. IV	Lack of unity of invention
☒	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
☐	Box No. VI	Certain documents cited
☐	Box No. VII	Certain defects in the international application
☐	Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
02.02.2005	24.06.2005
Name and mailing address of the international preliminary examining authority: European Patent Office - Gitschiner Str. 103 D-10958 Berlin Tel. +49 30 25901 - 0 Fax: +49 30 25901 - 840	Authorized Officer Wilson, M Telephone No. +49 30 25901-529

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/050433

Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

   ☐ This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
   - ☐ international search (under Rules 12.3 and 23.1(b))
   - ☐ publication of the international application (under Rule 12.4)
   - ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

Description, Pages

1, 3-7	as originally filed
2, 2bis	filed with telefax on 02.02.2005

Claims, Numbers

1-14	filed with telefax on 02.02.2005

Drawings, Sheets

1/2-2/2	as originally filed

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3. ☐ The amendments have resulted in the cancellation of:
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
   - ☐ the description, pages
   - ☐ the claims, Nos.
   - ☐ the drawings, sheets/figs
   - ☐ the sequence listing *(specify)*:
   - ☐ any table(s) related to sequence listing *(specify)*:

* *If item 4 applies, some or all of these sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/EP2004/050433

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-14
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-14
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-14
	No:	Claims	

2. Citations and explanations (Rule 70.7):

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following document:

D1: US 2003/023353 A1 (BADARNEH ZIAD) 30 January 2003 (2003-01-30)

1. Document D1 discloses (see fig. 15):

   A vehicle comprising a passenger compartment having a steering wheel (5) operated by the driver to steer the vehicle; a central control unit which supervises operation of active components of the vehicle, and modifies the operating parameters of the active components to modify the dynamic performance of the vehicle (see D1, §196, in which the control of various transmission modes, for instance normal, winter or sports mode, is mentioned); and a selection device (see for instance the switch of fig. 15) which is located inside the passenger compartment of the vehicle, and is operated by the driver to transmit a selected dynamic performance of the vehicle to the central control unit; wherein the selection device comprises a switch fitted to the steering wheel of the vehicle and rotatable between three different positions, each corresponding to a respective dynamic performance of the vehicle, in this case the different transmission modes mentioned above.

2. The subject matter of claim 1 differs from the above disclosure of document D1 in that at least four different dynamic vehicle performance positions can be selected by the selection device, and in that the switch can be rotated into a first position (A) wherein the dynamic performance of the vehicle is set to drive on low-grip road surfaces, a second position (B) wherein the dynamic performance of the vehicle is set to drive on low-grip road surfaces in sport driving mode, a third position (C) wherein the dynamic performance of the vehicle is set to drive on firm-grip road surfaces in sport driving mode, and a fourth position (D) wherein the dynamic performance of the vehicle (1) is set to drive in safe conditions in touring driving mode.

   Thus claim 1 is new (Article 33(2) PCT).

By means of the aforementioned additional features the problem is solved of allowing the rapid selection of one of at least four dynamic modes depending on road surface conditions and desired performance by means of a device which is compact and easy to use, thus improving the safety of the vehicle.

The solution according to claim 1 is considered to be inventive (Article 33(3) PCT), as the above combination of dynamic mode switch positions is not known from the prior art, nor is it inherently obvious to incorporate such modes into a switch according to document D1.

3. The subject matter of claim 11 differs from the above disclosure of document D1 in that at least four different dynamic vehicle performance positions can be selected by the selection device, and in that the switch is mounted to slide axially in opposition to elastic means, and can be pressed by a user to command performance by the central control unit of a racing-start procedure, if the vehicle is stationary when the switch is pressed.

   Claim 11 is therefore new (Article 33(2) PCT).

   The aforementioned features solve the problem of allowing the selection of a rapid start mode, along with one of at least four dynamic modes, without requiring an additional switch or making the existing dynamic mode switch excessively complex.

   The solution according to claim 11 is considered inventive (Article 33(3) PCT), as the additional features regarding the rapid start procedure are not known from the prior art, nor are they inherently obvious.

4. Claims 2-10 and 12-14 are dependant upon claim 1 and claim 11 respectively, and are thus also considered new (Article 33(2) PCT) and inventive (Article 33(3) PCT).

vehicle is normally equipped, on the central tunnel close to the gear lever, with a selection button for transmitting the driver-selected driving mode - normal or sport - to a central control unit.

The gradual increase in the number and complexity of electronic driver-aid devices calls for increased communication between the driver and the central control unit, to enable the central control unit to control the electronic driver-aid devices as best suited to both driving mode and weather conditions. Accordingly, it has been proposed to equip the central tunnel with a series of buttons enabling the driver to choose between various dynamic vehicle performance modes.

Tests have shown, however, that the above solution, featuring a number of buttons on the central tunnel, is complicated to use and tends to distract the driver when driving the vehicle.

US2003023353A1 discloses an arrangement for a switch-equipped steering wheel, in which at least two multifunction switches are mounted on opposite sides of a vehicle steering wheels relative to it center to effect control of vehicle functions and/or optional functions; a display device on the vehicle dashboard indicates available main functions and optional subsidiary functions thereof. A first of the multifunction switches can be manipulated to effect selection of a main function and/or subsidiary function; a second of the multifunction switches can be manipulated to effect initiation of

selected control operation or function control, and/or subsidiary control operation thereof. A person operating the switches can interactively control them by observing displays on the display device.

DE3941665A disclose a vehicle with steering-wheel-mounted automatic transmission control affording choices of more or less economical driving and manual override of automatic gear ratio selection. The baffle plate at the centre of the steering wheel is flanked by arrays of buttons for program selection and gear ratio selection; Park, Reverse, Neutral and Drive settings are selected conventionally with a lever mounted centrally on the floor; the program covers "sporty" driving, economical driving, manual gear selection using the opposite buttons, and driving under load.

DISCLOSURE OF INVENTION

It is an object of the present invention to provide a vehicle which is cheap and easy to produce, and which, at the same time, provides for eliminating the aforementioned drawbacks.

According to the present invention, there is provided a vehicle as claimed in the attached Claims.

BRIEF DESCRIPTION OF THE DRAWINGS

A non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

CLAIMS

1) A vehicle (1) comprising a passenger compartment having a steering wheel (12) operated by the driver to steer the vehicle (1); a central control unit (13) which supervises operation of active components of the vehicle (1), and modifies the operating parameters of the active components to modify the dynamic performance of the vehicle (1); and a selection device (15) which is located inside the passenger compartment of the vehicle (1), and is operated by the driver to transmit a selected dynamic performance of the vehicle (1) to the central control unit (13); the vehicle (1) is **characterized in that** the selection device (15) comprises a switch (16) fitted to the steering wheel (12) of the vehicle (1) and rotatable between at least four different positions (A, B, C, D), each corresponding to a respective dynamic performance of the vehicle (1); the switch (16) can be rotated into a first position (A) wherein the dynamic performance of the vehicle (1) is set to drive on low-grip road surfaces, a second position (B) wherein the dynamic performance of the vehicle (1) is set to drive on low-grip road surfaces in sport driving mode, a third position (C) wherein the dynamic performance of the vehicle (1) is set to drive on firm-grip road surfaces in sport driving mode, and a fourth position (D) wherein the dynamic performance of the vehicle (1) is set to drive in safe conditions in touring driving mode.

2) A vehicle (1) as claimed in Claim 1, wherein the switch (16) can be set to a fifth position (E) wherein the dynamic performance of the vehicle (1) is set to track racing mode.

3) A vehicle (1) as claimed in Claim 2, and comprising electronic driver-aid devices which are disabled when the switch (16) is set to the fifth position (E).

4) A vehicle (1) as claimed in Claim 2 or 3, wherein the switch (16) can only be set to the fifth position (E) from the third position (C) by moving the switch (16) linearly into a control position, from which the switch (16) returns automatically into the third position (C); the dynamic performance of the vehicle (1) being set according to the angular position of the switch (16) once the engine (4) of the vehicle (1) is turned off.

5) A vehicle (1) as claimed in one of Claims 1 to 4, wherein, to modify the dynamic performance of the vehicle (1), the central control unit (13) acts on a servocontrol of a gearbox (8), on an electronic control controlling the lock percentage of a self-locking differential (9), on an electronic control controlling suspension response, on an electronic control controlling the stability of the vehicle (1), and on an electronic control controlling drive and response of the engine (4).

6) A vehicle (1) as claimed in Claim 5, wherein, in the first position (A), the performance of the engine (4), the servocontrol of the gearbox (8), and the

electronic control controlling the lock percentage of the self-locking differential (9) are set for low-grip operation, while the electronic control controlling suspension response, and the electronic control controlling the stability of the vehicle (1) are set for normal operation; in the second position (B), the performance of the engine (4), the electronic control controlling suspension response, and the electronic control controlling the lock percentage of the differential (9) are set for normal operation, while the servocontrol of the gearbox (8), and the electronic control controlling the stability of the vehicle (1) are set for sport operation; in the third position (C), the performance of the engine (4), the electronic control controlling suspension response, the electronic control controlling the lock percentage, the servocontrol of the gearbox (8), and the electronic control controlling the stability of the vehicle (1) are set for sport operation; and, in the fourth position (D), the performance of the engine (4), the electronic control controlling suspension response, the electronic control controlling the lock percentage, the servocontrol of the gearbox (8), and the electronic control controlling the stability of the vehicle (1) are set for normal operation.

7) A vehicle (1) as claimed in one of Claims 1 to 6, wherein the steering wheel (12) has a recessed seat (18) housing the switch (16).

8) A vehicle (1) as claimed in Claim 7, wherein a

cover (19) is provided, and is hinged to the steering wheel (12) to close the seat (18) of the switch (16).

9) A vehicle (1) as claimed in one of Claims 1 to 8, wherein the switch (16) is mounted to slide axially in opposition to elastic means, and is pressed by a user to command performance by the central control unit (13) of a racing-start procedure, if the vehicle (1) is stationary when the switch (16) is pressed.

10) A vehicle (1) as claimed in Claim 9, wherein the switch (16) may be rotated into a first position (A) wherein the dynamic performance of the vehicle (1) is set to drive on low-grip road surfaces, a second position (B) wherein the dynamic performance of the vehicle (1) is set to drive on low-grip road surfaces in sport driving mode, a third position (C) wherein the dynamic performance of the vehicle (1) is set to drive on normal-grip road surfaces in sport driving mode, and a fourth position (D) wherein the dynamic performance of the vehicle (1) is set to drive in safe conditions in touring driving mode; the racing-start procedure only being performed if, when the switch (16) is pressed, the switch (16) is in the second or third position (B, C).

11) A vehicle (1) comprising a passenger compartment having a steering wheel (12) operated by the driver to steer the vehicle (1); a central control unit (13) which supervises operation of active components of the vehicle (1), and modifies the operating parameters of the active components to modify the dynamic performance of the

vehicle (1); and a selection device (15) which is located inside the passenger compartment of the vehicle (1), and is operated by the driver to transmit a selected dynamic performance of the vehicle (1) to the central control unit (13); the vehicle (1) is **characterized in that** the selection device (15) comprises a switch (16) fitted to the steering wheel (12) of the vehicle (1) and rotatable between at least four different positions (A, B, C, D), each corresponding to a respective dynamic performance of the vehicle (1); the switch (16) is mounted to slide axially in opposition to elastic means, and is pressed by a user to command performance by the central control unit (13) of a racing-start procedure, if the vehicle (1) is stationary when the switch (16) is pressed.

12) A vehicle (1) as claimed in Claim 11, wherein the switch (16) may be rotated into a first position (A) wherein the dynamic performance of the vehicle (1) is set to drive on low-grip road surfaces, a second position (B) wherein the dynamic performance of the vehicle (1) is set to drive on low-grip road surfaces in sport driving mode, a third position (C) wherein the dynamic performance of the vehicle (1) is set to drive on normal-grip road surfaces in sport driving mode, and a fourth position (D) wherein the dynamic performance of the vehicle (1) is set to drive in safe conditions in touring driving mode; the racing-start procedure only being performed if, when the switch (16) is pressed, the switch (16) is in the second or third position (B, C).

13) A vehicle (1) as claimed in Claim 12, wherein the steering wheel (12) has a recessed seat (18) housing the switch (16).

14) A vehicle (1) as claimed in Claim 13, wherein a cover (19) is provided, and is hinged to the steering wheel (12) to close the seat (18) of the switch (16).